STATEMENT OF PHYSICAL CHARACTERISTICS
AND
AGRICULTURAL LAND CLASSIFICATION

WHITWELL, BOWBURN, CO DURHAM

PROPOSED OPEN CAST COAL SITE
AND DRIFT MINE

? fcs 4732

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MAPS

1. STATEMENT OF PHYSICAL CHARACTERISTICS

1.1 Introduction

This 94 hectare site (grid reference NZ 321395) is located to the north east of Bowburn village east of the A1(M), 6 km south east of Durham.

The site was surveyed in January 1991 when soils were examined by hand auger borings to a depth of 1 metre at a density of a little over one boring per hectare at points predetermined by the National Grid.

Detailed soil descriptions to provide information on soil structure were carried out at inspection pits located at representative points on the western part of the site proposed for open cast mining.

All land quality assessments were made using the methods described in the "Revised Guidelines and Criteria for grading the quality of Agricultural Land" (MAFF 1988).

1.2 Land Use

The site is fairly evenly split between arable land which is more common in the west and permanent pasture in the east.

1.3 Climate

Average Annual Rainfall (AAR) is approximately 688 mm. Accumulated temperature above 0°C between January and June (ATO) is 1249 day °C and the land is at field capacity for 173 days a year. The rainfall and temperature figures impose an overall climatic limitation of grade 2 on all land in the area.

1.4 Relief

The site lies at a mean altitude of 107 m above ordnance datum (a.o.d.) with a range of between 95 and 120 metres a.o.d. Although in general the site is gently sloping at about 2° there are several steep slopes of between 10° and 28° along the 2 streams crossing the site, and on the side of the hill which rises to Old Cassop.

1.5 Geology

Soils are formed on heavy boulder clay which forms a thick cover over the underlying Coal Measures.

1.6 Drainage

Most soils are slowly permeable at less than 48 cm depth and fall within Wetness Class IV. The poor drainage causes wetness and workability problems which are one of the main limitation on land quality on the site.

1.7 Soil Properties

Only one soil type occurs in the western part of the site which is proposed for open cast mining.

i. Heavy or medium clay loam over cleyey boulder clay soil

This soil type covers the whole of the site except for occasional small patches of slightly sandier material. Topsoils consist of heavy or medium clay loam to around 25 cm over heavily mottled gleyed slowly permeable clay to depth. This soil is relatively stone free.

1.8 Soil Resources

The topsoil and subsoil resources for the western part of the site are shown on the accompanying maps along with soil depth information.

1.8a Topsoil

Unit T1

This unit consists of heavy material which is usually unmottled and only very slightly stony. Mean thickness is 25 cm with a moderately developed angular blocky structure.

1.8b Subsoil

Unit S1

Heavily mottled gleyed clay underlies the whole area. This is slowly permeable, relatively free from stones and has a strongly developed coarse angular blocky structure.

Mean thickness is 75 cm. The clay extends to a depth of more than 1 metre from the surface.

2. AGRICULTURAL LAND CLASSIFICATION

The ALC grades on the whole site are as follows:

Grade	Hectares	Percentage of Total Area
3a	5.8	6.2%
3b	85.4	90.7%
4	2.0	2.1%
5	0.5	0.5%
Urban	0.5	0.5%
Total	94.2	100%

2.1 Subgrade 3a

Land in this grade occurs in 2 locations. Topsoils consist of medium clay loam or sandy clay loam over similar upper subsoils passing to clay at depth. These soils are imperfectly drained, (Wetness Class III). Soil wetness and workability problems are the main limiting factors on land in this subgrade.

2.2 Subgrade 3b

Subgrade 3b land dominates the site. Soils consist of medium or heavy clay loams over similar or heavier clay subsoils. These soils are poorly drained being slowly permeable below 35 cm, and fall into Wetness Class IV. Severe soil wetness and workability problems are the limiting factors on land of this type.

2.3 Grade 4

This area on the hillside in the south east is limited to Grade 4 by slopes of 11°-18°. Soils are similar to those on the adjoining subgrade 3a land and consist of sandy clay loam or medium clay loam topsoils over similar subsoils.

2.4 Grade 5

This small area is limited to Grade 5 by gradients of more than 18°.

2.5 Urban

This consists of the road running from north to south across the site.

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Crop: Cereals
Slope: 3°
Weather: Cloudy, Sleet

Depth (cm)

0-25 Very dark greyish brown (10YR 3/2) unmottled, stoneless medium clay loam; moist; fine moderately developed angular blocky structure; firm; slightly sticky; moderately plastic; many fine fibrous roots; non calcareous; sharp smooth boundary.

25-40 Dark yellowish brown (10YR 4/6) heavy clay loam with many distinct grey (10YR 5/1) mottles; few subrounded medium sandstones; strongly developed coarse angular blocky structure; firm; slightly sticky; moderately plastic; common fine fibrous roots; non calcareous; abrupt smooth boundary.

40-100 Dark greyish brown (10YR 4/2) clay with many prominent grey (N5) and dark brown (75YR 4/4) mottles; few subrounded medium sandstones; strongly developed coarse angular blocky structure; firm; slightly sticky; moderately plastic; few fine fibrous roots; non calcareous.